Aravind Rajeswaran

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Facebook AI Research (FAIR Labs)
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Education

University of Washington, Seattle — *Sep 2016 – June 2021*
Ph.D. in Computer Science and Engineering
Advisers: Profs. **Sham Kakade** and **Emanuel (Emo) Todorov**
Committee Members: Sergey Levine, Byron Boots, and Eric Rombokas

Indian Institute of Technology Madras, Chennai — *Aug 2011 – July 2015*
BTech (Honors) in Chemical Engineering (focus on statistical physics)
Advisers: Profs. Balaraman Ravindran and Shankar Narasimhan

Employment and Internships

- **Facebook AI Research (FAIR Labs)** – Research Scientist
  Mentors : Abhinav Gupta and Jessica Hodgins — *April 2021 - present*
  Fundamental research to advance the state of the art in Artificial Intelligence.
- **Google Brain** - Student Researcher
  Mentors : Igor Mordatch — *Oct 2019 - May 2020*
  Part-time employment at Google to perform fundamental research.
- **Google Brain** - Research Internship
  Mentors : Vincent Vanhoucke and Vikash Kumar — *June 2019 - Sep 2019*
  Model-based reinforcement learning for robotics.
- **Nvidia Research Lab** - Research Internship (Part-Time)
  Mentors : Byron Boots and Dieter Fox — *June 2018 - Sep 2018*
  Mathematical formulation of safe reinforcement learning for robotics.
- **OpenAI** - Research Internship
  Mentors : John Schulman and Igor Mordatch — *June 2017 - Sep 2017*
  Reinforcement learning for dexterous robot hand manipulation.
- **Robert Bosch Center for AI** - Project Associate (Research Scientist)
  Mentors : Balaraman Ravindran — *Aug 2015 - Aug 2016*
  Risk-sensitive and safe deep reinforcement learning.
- **The Institute of Mathematical Sciences, Chennai** - Research Internship
  Mentors : Sitabhra Sinha — *Jan 2014 - Jan 2015*
  Analyzing cascading failures in complex networks using network theory.

Academic awards

- J. P. Morgan PhD Fellowship in AI — *2020*
- Facebook PhD fellowship finalist in ML — *2020*
- Conference travel award for ICML and ICLR — *2019*
- Best paper award at SIMPAR — *2018*
- One of the top reviewers for Neural Information Processing Systems (NIPS) — *2018*
- University of Washington PhD fellowship — *2016*
- Bhagyalakshmi and Krishna Ayengar award for best undergraduate thesis. — *2015*

Publications

[1] *Decision Transformer: Reinforcement Learning via Sequence Modeling* (* equal contributions)
L. Chen*, K. Lu*, A. Rajeswaran, K. Lee, A. Grover, M. Laskin,
P. Abbeel, A. Srinivas, I. Mordatch
Advances in Neural Information Processing Systems (**NeurIPS**), 2021.

[2] *Visual Adversarial Imitation Learning using Variational Models*
R. Rafailov, T. Yu, A. Rajeswaran, C. Finn
Advances in Neural Information Processing Systems (**NeurIPS**), 2021.

[3] *COMBO: Conservative Offline Model-Based Policy Optimization*
T. Yu*, A. Kumar*, R. Rafailov, A. Rajeswaran, S. Levine, C. Finn
Advances in Neural Information Processing Systems (**NeurIPS**), 2021.

[4] *Reinforcement Learning with Latent Flow*
W. Shang*, X. Wang*, A. Srinivas, A. Rajeswaran, Y. Gao, P. Abbeel, M. Laskin
Advances in Neural Information Processing Systems (**NeurIPS**), 2021.

[5] *Behavioral Priors & Dynamics Models: Improving Performance and Domain Transfer in Offline RL*
C. Cang, A. Rajeswaran, P. Abbeel, M. Laskin
Pre-print 2021, *arXiv: 2106.09119*

[6] *Offline Reinforcement Learning from Images with Latent Space Models*
R. Rafailov*, T. Yu*, A. Rajeswaran, C. Finn
Learning for Dynamics and Control (**L4DC**), 2021.

[7] *MOReL: Model-Based Offline Reinforcement Learning*
R. Kidambi*, A. Rajeswaran*, P. Netrapalli, T. Joachims
Advances in Neural Information Processing Systems (**NeurIPS**), 2020.

[8] *A Game Theoretic Framework for Model Based Reinforcement Learning*
A. Rajeswaran, I. Mordatch, V. Kumar
International Conference on Machine Learning (**ICML**), 2020.

[9] *Lyceum: An efficient and scalable ecosystem for robot learning.*
C. Summers, K. Lowrey, A. Rajeswaran, S. Srinivasa, E. Todorov
Learning for Dynamics and Control (**L4DC**), 2020.

[10] *Meta-Learning with Implicit Gradients.*
A. Rajeswaran*, C. Finn*, S. Kakade, S. Levine
Advances in Neural Information Processing Systems (**NeurIPS**), 2019.

[11] *Online Meta-Learning.*
C. Finn*, A. Rajeswaran*, S. Kakade, S. Levine
International Conference on Machine Learning (**ICML**), 2019.

[12] *Plan Online, Learn Offline: Efficient Learning and Exploration via Model-Based Control.*
K. Lowrey*, A. Rajeswaran*, S. Kakade, E. Todorov, I. Mordatch
International Conference on Learning Representations (**ICLR**), 2019.

[13] *Dexterous Manipulation with Deep Reinforcement Learning: Efficient, General, and Low Cost.*
H. Zhu, A. Gupta, A. Rajeswaran, S. Levine, V. Kumar
International Conference on Robotics and Automation (**ICRA**), 2019.

[14] *Reinforcement learning for non-prehensile manipulation: Transfer from simulation to physical system.*
K. Lowrey, S. Kolev, J. Dao, A. Rajeswaran, E. Todorov,
Conference on Simulation, Modeling, and Programming for Autonomous Robots (SIMPAR), 2018
(Best Paper Award)

[15] *Variance Reduction for Policy Gradient Using Action-Dependent Factorized Baselines.*
C. Wu, A. Rajeswaran, Y. Duan, V. Kumar, A. Bayen, S. Kakade, I. Mordatch, P. Abbeel
International Conference on Learning Representations (**ICLR**), 2018. **(Full Oral)**

[16] *Divide-and-Conquer Reinforcement Learning.*
D. Ghosh, A. Singh, A. Rajeswaran, V. Kumar, S. Levine
International Conference on Learning Representations (**ICLR**), 2018.

[17] *Learning complex dexterous manipulation with deep reinforcement learning and demonstrations.*
A. Rajeswaran*, V. Kumar*, A. Gupta, G. Vezzani, J. Schulman, E. Todorov, S. Levine
Proceedings of Robotics: Science and Systems (**RSS**), 2018.

[18] *Towards generalization and simplicity in continuous control.*
A. Rajeswaran, K. Lowrey, E. Todorov, S. Kakade
Advances in Neural Information Processing Systems (**NIPS**), 2017.

[19] *EPOpt: Learning robust neural network policies using model ensembles.*
A. Rajeswaran, S. Ghotra, B. Ravindran, S. Levine
International Conference on Learning Representations (**ICLR**), 2017.

[20] *Identifying Topology of Power Distribution Networks Based on Smart Meter Data.*
S. Jayadev, N. Bhatt, R. Pasumarthy, A. Rajeswaran
IEEE Transactions on Smart Grid, 2017.

[21] *A Graph Partitioning Approach for Leak Detection in Water Distribution Networks.*
A. Rajeswaran, S. Narasimhan, S. Narasimhan
Computers & Chemical Engineering, 2017.

Invited Talks

- Model-Based Offline Reinforcement Learning. TWIML podcast. ***2020***
- Recent advances in model-based RL. CILVR Lab, NYU. ***2020***
- Data-driven models for efficient Reinforcement Learning. MIT. ***2020***
- Data-driven models for efficient Reinforcement Learning. Google Brain. ***2020***
- Data-driven models for efficient Reinforcement Learning. DeepMind. ***2020***
- Data-driven models for efficient Reinforcement Learning. Microsoft Research. ***2020***
- Data-driven models for efficient Reinforcement Learning. Facebook AI Research. ***2020***
- Data-driven models for efficient Reinforcement Learning. UC Berkeley. ***2020***
- Data-driven models for efficient Reinforcement Learning. SAIL Lab, Stanford University. ***2020***
- POLO: A new framework for model-based control and learning. Informs annual meeting. ***2019***
- Towards embodied artificial intelligence. CMU and FAIR Pittsburgh. ***2019***
- Accelerating robot learning. UW CSE affiliates day. ***2018***
- Towards generalization and simplicity in continuous control. OpenAI. ***2017***

Professional Service and Teaching

Course Instructor and TA

- Fully designed and **taught** a special topics course at UW on deep RL for robotics. [course website]
- Teaching assistant for advanced graduate level machine learning courses at UW.

Workshops Organized

- Object Representations for Learning and Reasoning (website), NeurIPS 2020.
- Generative Modeling and Model-Based Reasoning for Robotics and AI (website), ICML 2019.

Reviewing and Program Committee

- **Conferences**
  - NeurIPS (2018, 2019, 2020)
  - ICML (2018, 2019, 2020, 2021)
  - ICLR (2019, 2020, 2021)
  - CoRL (2019, 2020)
  - ICRA (2019)
- **Workshop programming committee**
  - Deep Reinforcement Learning Symposium, NeurIPS (2018, 2019, 2020)
  - Exploration in RL workshop (ICML 2018)

References

- **Dr. Sham Kakade**, Professor (CSE & Statistics), University of Washington.
- **Dr. Emo Todorov**, Affiliate Professor, University of Washington. Founder, Roboti LLC.
- **Dr. Sergey Levine**, Assistant Professor (EECS), UC Berkeley.
- **Dr. Pieter Abbeel**, Professor (EECS), UC Berkeley. Co-Founder and Chief Scientist, Covariant.
- **Dr. Abhinav Gupta**, Associate Professor, CMU. Researcher Manager, Facebook AI Research.
- **Dr. Jessica Hodgins**, Professor, CMU. Research Manager, Facebook AI Research.